	Type	L #	Hits	Search Text	DBs
1	BRS	L1	12912	microfluid$9	US-PGPUB; USPAT
2	BRS	L2	171	1 and loop near8 channel	US-PGPUB; USPAT
3	BRS	L3	916	1 and (loop? or round or circular) near8 (channel or microchannel or chamber)	US-PGPUB; USPAT
4	BRS	L4	104	1 and (loop? or round or circular) near8 (channel or microchannel or chamber) same (valve or microvalve)	US-PGPUB; USPAT
5	BRS	L5	36	4 and peristaltic near8 pump	US-PGPUB; USPAT
6	BRS	L6	55804	(loop? or round or circular) near8 (channel or microchannel or chamber)	US-PGPUB; USPAT
7	BRS	L7	4995	(loop? or round or circular) near8 (channel or microchannel or chamber) same (valve or microvalve)	US-PGPUB; USPAT
8	BRS	L8	113	7 and peristaltic near8 pump	US-PGPUB; USPAT
9	BRS	L10	264	7 and (valve or microvalve) with membrane	US-PGPUB; USPAT
10	BRS	L9	19	7 and (valve or microvalve) with elastomeric near8 membrane	US-PGPUB; USPAT

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 NEWS  7  MAY 30  IPC 8 Rolled-up Core codes added to CA/CAplus and
                  USPATFULL/USPAT2
 NEWS  8  MAY 30  The F-Term thesaurus is now available in CA/CAplus
 NEWS  9  JUN 02  The first reclassification of IPC codes now complete in
                  INPADOC
 NEWS 10  JUN 26  TULSA/TULSA2 reloaded and enhanced with new search and
                  and display fields
 NEWS 11  JUN 28  Price changes in full-text patent databases EPFULL and PCTFULL
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 NEWS 13  JUl 14  FSTA enhanced with Japanese patents
 NEWS 14  JUl 19  Coverage of Research Disclosure reinstated in DWPI
 NEWS 15  AUG 09  INSPEC enhanced with 1898-1968 archive
 NEWS 16  AUG 28  ADISCTI Reloaded and Enhanced
 NEWS 17  AUG 30  CA(SM)/CAplus(SM) Austrian patent law changes

 NEWS EXPRESS  JUNE 30 CURRENT WINDOWS VERSION IS V8.01b, CURRENT
               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 26 JUNE 2006.

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=> s microfluid?
L1        17313 MICROFLUID?

=> s l1 and loop (8w) channel
L2           18 L1 AND LOOP (8W) CHANNEL

=> s l1 and (loop? or round or circular) (8w) (channel or microchannel or chamber)
L3          100 L1 AND (LOOP? OR ROUND OR CIRCULAR) (8W) (CHANNEL OR MICROCHANNE
                L OR CHAMBER)

=> s l1 and (loop? or round or circular) (8w) (channel or microchannel or chamber)
(p) (valve or microvalve)
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'CHAMBER) (P) '
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'CHAMBER) (P) '
L4            8 L1 AND (LOOP? OR ROUND OR CIRCULAR) (8W) (CHANNEL OR MICROCHANNE
                L OR CHAMBER) (P) (VALVE OR MICROVALVE)

=> s l1 and (loop? or round or circular) (8w) (channel or microchannel or chamber)
(p) (valve or microvalve) (s) elastomeric (8w) membrane
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'CHAMBER) (P) '
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'CHAMBER) (P) '
L5            0 L1 AND (LOOP? OR ROUND OR CIRCULAR) (8W) (CHANNEL OR MICROCHANNE
                L OR CHAMBER) (P) (VALVE OR MICROVALVE) (S) ELASTOMERIC (8W)
               MEMBRANE

=> s l1 and (loop? or round or circular) (8w) (channel or microchannel or chamber)
(p) (valve or microvalve) (s) membrane
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'CHAMBER) (P) '
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'CHAMBER) (P) '
L6            1 L1 AND (LOOP? OR ROUND OR CIRCULAR) (8W) (CHANNEL OR MICROCHANNE
                L OR CHAMBER) (P) (VALVE OR MICROVALVE) (S) MEMBRANE

=> s l3 and peristaltic (8w) (pump or micropump)
L7            1 L3 AND PERISTALTIC (8W) (PUMP OR MICROPUMP)

=> s (loop? or round or circular) (8w) (channel or microchannel or chamber) (p)
(valve or microvalve) (s) elastomeric (8w) membrane
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'CHAMBER) (P) '
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'CHAMBER) (P) '
L8            0 (LOOP? OR ROUND OR CIRCULAR) (8W) (CHANNEL OR MICROCHANNEL OR
                CHAMBER) (P) (VALVE OR MICROVALVE) (S) ELASTOMERIC (8W) MEMBRANE
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=> s (loop? or round or circular) (8w) (channel or microchannel or chamber) (p)
(valve or microvalve) (s) membrane
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'CHAMBER) (P) '
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'CHAMBER) (P) '
L9            4 (LOOP? OR ROUND OR CIRCULAR) (8W) (CHANNEL OR MICROCHANNEL OR
                CHAMBER) (P) (VALVE OR MICROVALVE) (S) MEMBRANE

=> s (loop? or round or circular) (8w) (channel or microchannel or chamber) (p)
(valve or microvalve)
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'CHAMBER) (P) '
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'CHAMBER) (P) '
L10         107 (LOOP? OR ROUND OR CIRCULAR) (8W) (CHANNEL OR MICROCHANNEL OR
                CHAMBER) (P) (VALVE OR MICROVALVE)

=> display l4 1-8 ibib abs

L4   ANSWER 1 OF 8  CAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         2003:1014457  CAPLUS
TITLE:                    Recirculating fluidic network and methods for using
                          the same
INVENTOR(S):              Manger, Ian D.; Barco, Joseph W.; Nassef, Hany R.
PATENT ASSIGNEE(S):       Fluidigm Corporation, USA
SOURCE:                   PCT Int. Appl.
                          CODEN: PIXXD2
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    --------------------   --------
     WO 2004000721        A2    20031231    WO 2003-US19775        20030623
     WO 2004000721        A3    20050203
         W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,
             PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR,
             TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
        RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
             KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
             FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,
             BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
     AU 2003277853        A1    20040106    AU 2003-277853         20030623
     US 2004180377        A1    20040916    US 2003-602489         20030623
     EP 1535066           A2    20050601    EP 2003-742152         20030623
         R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
     JP 2005531001        T2    20051013    JP 2004-516154         20030623
     US 2006086309        A1    20060427    US 2005-517942         20050804
PRIORITY APPLN. INFO.:                      US 2002-391292P     P  20020624
                                            WO 2003-US19775     W  20030623
AB   The present invention provides microfluidic devices and methods
     for using the same.  In particular, microfluidic devices of the
     present invention are useful in conducting a variety of assays and high
     throughput screening.  Microfluidic devices of the present
     invention include elastomeric components and solid substrate component for
     attaching ligand(s) on its surface.  The elastomeric layer comprises (a) a
     plurality of first flow channels; (b) a plurality of second flow channels
     each intersecting and crossing each of said first flow channels thereby
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providing a plurality of intersecting areas formed at intersections between said first flow channels and said second flow channels, wherein said plurality of first flow channels and said plurality of second flow channels are adapted to allow the flow of a solution therethrough, and wherein said solid substrate surface is in fluid communication with at least said intersecting areas of said plurality of first flow channels and said plurality of second flow channels, and wherein said plurality of first flow channels and/or said plurality of second flow channels are capable of forming a plurality of looped flow channels
; (c) a plurality of control channels; (d) a plurality of first control valves each operatively disposed with respect to each of said first flow channel to regulate flow of the solution through said first flow channels, wherein each of said first control valves comprises a first control channel and an elastomeric segment that is deflectable into or retractable from said first flow channel upon which said first control valve operates in response to an actuation force applied to said first control channel, the elastomeric segment when positioned in said first flow channel restricting solution flow therethrough; (e) a plurality of second control valves each operatively disposed with res.

L4 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:	2000:816166 CAPLUS
TITLE:	Miniature valveless ultrasonic pumps and mixers
AUTHOR(S):	Rife, J. C.; Bell, M. I.; Horwitz, J. S.; Kabler, M. N.; Auyeung, R. C. Y.; Kim, W. J.
CORPORATE SOURCE:	Naval Research Laboratory, Washington, DC, 20375, USA
SOURCE:	Sensors and Actuators, A: Physical (2000), A86(1-2), 135-140 CODEN: SAAPEB; ISSN: 0924-4247
PUBLISHER:	Elsevier Science S.A.
DOCUMENT TYPE:	Journal
LANGUAGE:	English

AB Miniature acousto-fluidic devices are described that operate as pumps without valves in channel widths of millimeters and below. These devices can also be configured to produce mixing in low-Reynolds-number flows. The prototypes are based on radio-frequency, ultrasonic piezoelec. transducers that exert a directed body force on the fluid via acoustic attenuation. The process is a type of acoustic streaming termed quartz wind. In microfluidics applications, this mechanism has the advantages of insensitivity to the chemical state of the fluid or walls and greatly reduced crosstalk in a multichannel system. The observed pump flow velocities are on the order of 1 mm/s in 1.6 + 1.6 mm2 channels and with a calculated maximum backpressure that can be pumped against of 0.13 Pa. Due to the low backpressure, quartz wind devices are not competitive pumps for open-loop and high-impedance microfluidics systems but could find application in pumping in low-impedance planar and closed-loop systems and for mixing in reservoirs and channels.

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 3 OF 8 INSPEC (C) 2006 IET on STN

ACCESSION NUMBER:	2006:8754236 INSPEC
TITLE:	Performance of a serial-connection multi-chamber piezoelectric micropump
AUTHOR:	Kan Jun-wu; (Coll. of Mech. Eng., Jilin Univ., Changchun, China), Xuan Ming; Liu Guo-jun; Yang Zhi-gang; Wu Yi-hui
SOURCE:	Optics and Precision Engineering (Oct. 2005), vol.13, no.5, p. 535-41, 19 refs.ISSN: 1004-924X SICI: 1004-924X(200510)13:5L.535:PSCM;1-C Published by: Editorial Board of Optics and Precision Engineering, China
DOCUMENT TYPE:	Journal

TREATMENT CODE: Practical; Theoretical
COUNTRY: China
LANGUAGE: Chinese
AN 2006:8754236 INSPEC
AB The concept and structure of serial-connection multi-chamber (SCMC) micropumps with cantilever valves is introduced. The SCMC micropump, which can be manufactured using conventional production techniques and materials, has a multi-layer circular planar structure. The border-upon piezoelectric actuators of a SCMC micropump work in anti-phase, as a result the pumping performance is similar to that of several single-chamber pumps running in series. The theoretical analysis shows that the pumping performance of a SCMC micropump depends not only on the characteristic and geometrical parameters of the piezoelectric actuators, but also on the number of pump chambers. Both flowrate and pressure of a SCMC pump can be enhanced to a certain extent. Four piezoelectric micropumps with different chambers were fabricated and tested. The testing results show that the enhancing extents of the flowrate and pressure of a SCMC piezoelectric micropump are different. The maximum flowrate and pressure of the four-chamber pump achieved are 2. 5 times and 3. 6 times those of the single-chamber pump achieved

L4 ANSWER 4 OF 8 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2005:8597719 INSPEC
DOCUMENT NUMBER: A2005-22-4710-042; B2005-11-2575-027; C2005-11-7440-091
TITLE: Modelling of layered fluid flow in a circular microchannel
AUTHOR: Aumeerally, M.; Sitte, R. (Sch. of Inf. Technol., Griffith Univ., Gold Coast, Qld., Australia)
SOURCE: The European Simulation and Modelling Conference 2003, 2003, p. 458-62 of xx+557 pp., 11 refs.
Editor(s): Di Martino, B.; Yang, L.T.; Bobeanu, C.
ISBN: 90 77381 04 X
Published by: EUROSIS, Ghent, Belgium
Conference: The European Simulation and Modelling Conference 2003, Naples, Italy, 27-29 Oct. 2003
DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Application; Practical; Theoretical
COUNTRY: Belgium
LANGUAGE: English
AN 2005:8597719 INSPEC DN A2005-22-4710-042; B2005-11-2575-027; C2005-11-7440-091
AB Microfluidic MEMS devices can be used in a wide range of applications. The design and manufacture of such devices use the same processing technique as in integrated circuits. MEMS are often structured into microchannels, microvalves, and micropumps. The flow characteristics of microchannels are important in the design of these devices. This paper describes the modeling of fluid flow in circular microchannels using an electrical network. It contributes to the physical component of our virtual reality-prototyping CAD tool for MEMS, with emphasis on fast calculations for VR representations. With the underlying fluid flow model based on traditional continuum theory, the flow model is segmented into layered sections with different flow rate. This paper presents the models for the circular sections. The flow characteristics of each sections are modeled as resistors in an electrical circuit. Simulink (.COPYRGT.Matlab) is used to simulate the behaviour of the model

L4 ANSWER 5 OF 8 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2002:7446026 INSPEC
DOCUMENT NUMBER: B2002-12-2575F-043
TITLE: Three-dimensional silicone device fabrication and interconnection scheme for microfluidic applications using sacrificial wax layers

AUTHOR: Dharmatilleke, S.; Henderson, H.T. (Dept. of Electr. Comput. Eng. & Comput. Sci., Cincinnati Univ., OH, USA)
SOURCE: Micro-Electro-Mechanical Systems (MEMS). 2000 ASME International Mechanical Engineering Congress and Exposition, 2000, p. 413-18 of xiv+727 pp., 3 refs.
Editor(s): Lee, A.P.; Malshe, A.P.; Forster, F.K.; Tan, Q.; Keynton, R.S.
ISBN: 0 7918 1900 0
Published by: ASME, New York, NY, USA
Conference: Micro-Electro-Mechanical Systems (MEMS). 2000 ASME International Mechanical Engineering Congress and Exposition, Orlando, FL, USA, 5-10 Nov. 2000
Sponsor(s): ASME
DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Application; Practical; Experimental
COUNTRY: United States
LANGUAGE: English
AN 2002:7446026 INSPEC DN B2002-12-2575F-043
AB A simple room-temperature procedure is reported herein for formation of true three-dimensionality of 'microfluidic components' and complete microfluidic systems in silicone elastomer; this is achieved by molding the plastic to simply encapsulate a pre-formed network of sacrificial wax threads or other connected wax configurations which are ultimately to become micro channels, microfluidic components and cavities in the plastic motherboard. When these wax sacrificial areas are etched away with acetone, precise cavities, channels, and capillaries result with direct arbitrary three-dimensionality. This method leads also to a simple and effective external interconnection scheme where ordinary fused silica tubes may be press-fitted into the surface opening to withstand high pressure. An array of micro channels having circular cross sections with diameters of 100, 150 and 200 microns, membrane type valves, pinch valves, mixing chambers and reservoirs for fluid storage were molded in silicone elastomer using wax filaments. The wax filaments were dissolved in acetone after the silicone elastomer became hardened, leaving the micro channels, valves, mixing chambers and reservoirs in the silicone elastomer. This scheme gives the flexibility of allowing multi stacks of components (motherboards) while being able to control the channel lengths within the stacks as desired. This microfluidic system will be used to detect biohazard agents through a biochemical immunoassay

L4 ANSWER 6 OF 8 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2000:6775470 INSPEC
DOCUMENT NUMBER: A2001-01-4760-007; B2001-01-2575-006
TITLE: Miniature valveless ultrasonic pumps and mixers
AUTHOR: Rife, J.L.; Bell, M.I.; Horwitz, J.S.; Kabler, M.N.; (Naval Res. Lab., Washington, DC, USA), Auyeung, R.C.Y.; Kim, W.J.
SOURCE: Sensors and Actuators A (Physical) (30 Oct. 2000), vol.A86, no.1-2, p. 135-40, 28 refs.
CODEN: SAAPEB, ISSN: 0924-4247
SICI: 0924-4247(20001030)A86:1/2L.135:MVUP;1-G
Price: 0924-4247/2000/$20.00
Doc.No.: S0924-4247(00)00433-7
Published by: Elsevier, Switzerland
DOCUMENT TYPE: Journal
TREATMENT CODE: Practical; Experimental
COUNTRY: Switzerland
LANGUAGE: English
AN 2000:6775470 INSPEC DN A2001-01-4760-007; B2001-01-2575-006
AB Miniature acousto-fluidic devices are described that operate as pumps

without valves in channel widths of millimeters and below. These devices can also be configured to produce mixing in low-Reynolds-number flows. The prototypes are based on radio-frequency, ultrasonic piezoelectric transducers that exert a directed body force on the fluid via acoustic attenuation. The process is a type of acoustic streaming termed quartz wind. In microfluidics applications, this mechanism has the advantages of insensitivity to the chemical state of the fluid or walls and greatly reduced crosstalk in a multichannel system. The observed pump flow velocities are on the order of 1 mm/s in 1.6+1.6 mm2 channels and with a calculated maximum backpressure that can be pumped against of 0.13 Pa. Due to the low backpressure, quartz wind devices are not competitive pumps for open-loop and high-impedance microfluidics systems but could find application in pumping in low-impedance planar and closed-loop systems and for mixing in reservoirs and channels

L4 ANSWER 7 OF 8 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2000:6636002 INSPEC
DOCUMENT NUMBER: B2000-08-8380M-014; C2000-08-3260P-013
TITLE: A normally closed in-channel micro check valve
AUTHOR: Xuan-Qi Wang; Yu-Chong Tai (Dept. of Electr. Eng., California Inst. of Technol., Pasadena, CA, USA)
SOURCE: Proceedings IEEE Thirteenth Annual International Conference on Micro Electro Mechanical Systems (Cat. No.00CH36308), 2000, p. 68-73 of xiv+810 pp., 6 refs.
ISBN: 0 7803 5273 4
Price: 0 7803 5273 4/2000/$10.00
Published by: IEEE, Piscataway, NJ, USA
Conference: Proceedings IEEE Thirteenth Annual International Conference on Micro Electro Mechanical Systems, Miyazaki, Japan, 23-27 Jan. 2000
Sponsor(s): IEEE Robotics & Autom. Soc.; Micromachine Center
DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Practical; Experimental
COUNTRY: United States
LANGUAGE: English
AN 2000:6636002 INSPEC DN B2000-08-8380M-014; C2000-08-3260P-013
AB We present here the first surface-micromachined, normally closed, in-channel, Parylene check valve. This device is fabricated monolithically on a silicon substrate using a five-layer Parylene process. The operating structure of the check valve is a circular sealing plate on top of a ring-shaped valve seat. The sealing plate is center-anchored on top of a chamber diaphragm that is vacuum-collapsed to the bottom of the chamber in order to achieve a normally closed position. A thin gold layer on the roughened valve seat surface is used to reduce stiction between the sealing plate and the valve seat. We have achieved an in-channel check valve with a cracking (opening) pressure of 20 40 kPa under forward bias and no measurable leakage under reverse bias up to 270 kPa. Using this design, this valve performs well in two-phase microfluidic systems (i.e. microchannel flows containing gas, liquid, or gas/liquid mixture)

L4 ANSWER 8 OF 8 COMPENDEX COPYRIGHT 2006 EEI on STN
ACCESSION NUMBER: 2001(1):167 COMPENDEX
TITLE: Miniature valveless ultrasonic pumps and mixers.
AUTHOR: Rife, J.C. (Naval Research Lab, Washington, DC, USA); Bell, M.I.; Horwitz, J.S.; Kabler, M.N.; Auyeung, R.C.Y.; Kim, W.J.
SOURCE: Sensors and Actuators, A: Physical v 86 n 1-2 Oct 2000. p 135-140, Elsevier Sequoia SA, Lausanne, Switzerland
CODEN: SAAPEB ISSN: 0924-4247

PUBLICATION YEAR: 2000
DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
LANGUAGE: English
AN 2001(1):167 COMPENDEX
AB Miniature acousto-fluidic devices are described that operate as pumps without valves in channel widths of millimeters and below. These devices can also be configured to produce mixing in low-Reynolds-number flows. The prototypes are based on radio-frequency, ultrasonic piezoelectric transducers that exert a directed body force on the fluid via acoustic attenuation. The process is a type of acoustic streaming termed quartz wind. In microfluidics applications, this mechanism has the advantages of insensitivity to the chemical state of the fluid or walls and greatly reduced crosstalk in a multichannel system. The observed pump flow velocities are on the order of 1 mm/s in 1.6*1.6 mm2 channels and with a calculated maximum backpressure that can be pumped against of 0.13 Pa. Due to the low backpressure, quartz wind devices are not competitive pumps for open-loop and high-impedance microfluidics systems but could find application in pumping in low-impedance planar and closed-loop systems and for mixing in reservoirs and channels.(Author abstract) 28 Refs.

=> display l9 1-4 ibib abs

L9 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1967:455408 CAPLUS
DOCUMENT NUMBER: 67:55408
TITLE: Membrane compressor
AUTHOR(S): Ormut, G.
SOURCE: Ingenieria Quimica (Mexico City) (1967), 12(127), 36-43
CODEN: INQUAF; ISSN: 0020-1081
DOCUMENT TYPE: Journal
LANGUAGE: Spanish
AB The system is based on the elastic deformation suffered by a thin, metallic membrane that assures, by an alternative flexion, the suction and discharge of carried gases. The membrane is held in place by circular flanges, forming a wall between the 2 chambers. In the lower one, the piston works in a sealed liquid, distending the flexible sheet (upper surface convex) or permitting it to return to normal or to be sucked in (upper surface concave). The gas to be compressed enters the upper chamber through the inlet valve on the suction stroke and leaves through the outlet valve on the pressure stroke. Since it has no moving parts, except the flexible membrane and valves, it is suited for the most severe service and repairs are easily made. Values of compression up to 30,000 psi. in 3 stages, are obtained. It can be applied to compress air, O. F, and corrosive and flammable gases. The same principle is applied to membrane pumps.

L9 ANSWER 2 OF 4 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2002:7446026 INSPEC
DOCUMENT NUMBER: B2002-12-2575F-043
TITLE: Three-dimensional silicone device fabrication and interconnection scheme for microfluidic applications using sacrificial wax layers
AUTHOR: Dharmatilleke, S.; Henderson, H.T. (Dept. of Electr. Comput. Eng. & Comput. Sci., Cincinnati Univ., OH, USA)
SOURCE: Micro-Electro-Mechanical Systems (MEMS). 2000 ASME International Mechanical Engineering Congress and Exposition, 2000, p. 413-18 of xiv+727 pp., 3 refs.
Editor(s): Lee, A.P.; Malshe, A.P.; Forster, F.K.; Tan, Q.; Keynton, R.S.

ISBN: 0 7918 1900 0
Published by: ASME, New York, NY, USA
Conference: Micro-Electro-Mechanical Systems (MEMS). 2000 ASME International Mechanical Engineering Congress and Exposition, Orlando, FL, USA, 5-10 Nov. 2000
Sponsor(s): ASME

DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Application; Practical; Experimental
COUNTRY: United States
LANGUAGE: English

AN 2002:7446026 INSPEC DN B2002-12-2575F-043

AB A simple room-temperature procedure is reported herein for formation of true three-dimensionality of 'microfluidic components' and complete microfluidic systems in silicone elastomer; this is achieved by molding the plastic to simply encapsulate a pre-formed network of sacrificial wax threads or other connected wax configurations which are ultimately to become micro channels, microfluidic components and cavities in the plastic motherboard. When these wax sacrificial areas are etched away with acetone, precise cavities, channels, and capillaries result with direct arbitrary three-dimensionality. This method leads also to a simple and effective external interconnection scheme where ordinary fused silica tubes may be press-fitted into the surface opening to withstand high pressure. An array of micro channels having circular cross sections with diameters of 100, 150 and 200 microns, membrane type valves, pinch valves, mixing chambers and reservoirs for fluid storage were molded in silicone elastomer using wax filaments. The wax filaments were dissolved in acetone after the silicone elastomer became hardened, leaving the micro channels, valves, mixing chambers and reservoirs in the silicone elastomer. This scheme gives the flexibility of allowing multi stacks of components (motherboards) while being able to control the channel lengths within the stacks as desired. This microfluidic system will be used to detect biohazard agents through a biochemical immunoassay

L9 ANSWER 3 OF 4 INSPEC (C) 2006 IET on STN

ACCESSION NUMBER: 1981:1719003 INSPEC
DOCUMENT NUMBER: A1981-074428
TITLE: Device for testing polymer film under gas pressure
AUTHOR: Gordeev, Yu.M.; Koz'menkova, L.N.; Kovalev, B.A.; Belov, V.A.
SOURCE: Industrial Laboratory (May 1980), vol.46, no.5, p. 512-14, 3 refs.
CODEN: INDLAP, ISSN: 0019-8447
Translation of: Zavodskaya Laboratoriya (May 1980), vol.46, no.5, p. 462-4
CODEN: ZVDLAU, ISSN: 0321-4265
DOCUMENT TYPE: Journal; Translation Abstracted
TREATMENT CODE: Experimental
COUNTRY: United States; USSR
LANGUAGE: English

AN 1981:1719003 INSPEC DN A1981-074428

AB Describes a device for testing polymer film by subjecting it to pressure produced by various gaseous media. The film specimen is held by a screw along a circular contour between two chambers. In order to avoid sagging of the film the working chamber is closed by a perforated plate and connected by a system of holes to the displacement chamber. Compressed air is supplied into a cylindrical cavity. A dividing membrane is pressed between the displacement chamber and this cavity; it is 1 mm thick and made from elastic rubber. The device is fitted with a fine adjustment valve, stop taps and pipe connections for feeding gas and compressed air into the chamber and for controlling their flow. The deformation of the film while it is pressed-through is recorded by an induction sensor incorporating

ferromagnetic rod (M400NN) whose length is 100 mm and diameter 8 mm

L9 ANSWER 4 OF 4 COMPENDEX

ACCESSION NUMBER: 2003(47):6982 COMPENDEX

TITLE: A selectively anodic bonded micropump for implantable medical drug delivery systems.

AUTHOR: Ridgeway, Shane (Department of Mechanical Engineering Iowa State University 2020 Black Engineering Building, Ames, IA 50011, United States); Cao, Li; Song, Junho

MEETING TITLE: 2002 ASME International Mechanical Engineering Congress and Exhibition.
MEETING ORGANIZER: Bioengineering Division, ASME
MEETING LOCATION: New Orleans, LA, United States
MEETING DATE: 17 Nov 2002-22 Nov 2002
SOURCE: American Society of Mechanical Engineers, Bioengineering Division (Publication) BED v 54 2002.p 175-180
CODEN: ASMBEP ISSN: 1071-6947
PUBLICATION YEAR: 2002
MEETING NUMBER: 61804
DOCUMENT TYPE: Conference Article
TREATMENT CODE: Theoretical
LANGUAGE: English
AN 2003(47):6982 COMPENDEX

AB Microelectromechanical Systems (MEMS) fabrication techniques offer a unique solution for implantable medical drug delivery systems. An implantable medical drug delivery system can relieve the pain associated with frequent injections and deliver a localized dosage. An implantable drug delivery system can also avoid contamination and infection better than conventional injection methods (such as intravenous injection). The major advantage of microfabricated drug delivery systems is the possibility of mass production at low cost. A silicon based peristaltically actuated implantable medical drug delivery system consisting of three pumping chambers was microfabricated and tested. The unique features of this microfabricated drug delivery system include the design of a selectively anodic bonded micropump. The selectively anodic bonded Pyrex glass wafer was used to seal the pump chambers and allow for a view of fluid movement. Chromium was used as a selective bonding material. A 20 nm thick chromium film deposited on the top surface of the silicon valves successfully prevented bonding between the valve and the glass wafer. The pump operates with a normally closed valve which consists of a silicon mesa located at the center of each chamber. This mesa makes intimate contact with the glass wafer. Three 180 mum deep and 12 mm diameter circular chambers were etched into the top surface of the silicon wafer using deep reactive ion etching (DRIE) and connected by two 1 mm wide channels. Directly opposite the chambers, three 12 mm diameter circular features were etched 320 mum deep using DRIE to create a 50 mum thick silicon membrane and provide an attachment point for piezoelectric actuating disks. The piezoelectric disks were applied using a conductive silver epoxy. A positive potential was applied to the gold layer that was e-beam deposited on the substrate, with the negative terminal applied to each individual actuator. The three pump chambers were actuated in a peristaltic motion with driving frequencies ranging from 0.5 to 4 Hz and actuation voltages ranging from 10 - 130 V. The design goal of 10 muL/min was met at driving frequencies of 2 and 4 Hz where the maximum flowrate was 10.1 and 11.4 muL/min for the 2 and 4 Hz actuation frequencies respectively at an actuation voltage of 130 V. The maximum pressure achieved by the pump was 35.8 mmH2O for the 2 and 4 Hz actuation frequencies at an actuation voltage of 130 V. 10 Refs.